

## CLAIMS

We claim:

1. A targeting construct comprising:
  - (a) a first polynucleotide sequence homologous to at least a first portion of a PTP36 gene;
  - (b) a second polynucleotide sequence homologous to at least a second portion of the PTP36 gene; and
  - (c) a selectable marker.
2. A method of producing a targeting construct, the method comprising:
  - (a) providing a first polynucleotide sequence homologous to at least a first portion of a PTP36 gene;
  - (b) providing a second polynucleotide sequence homologous to at least a second portion of the PTP36 gene;
  - (c) providing a selectable marker; and
  - (d) inserting the first sequence, second sequence, and selectable marker into a vector, to produce the targeting construct.
3. A cell comprising a disruption in a PTP36 gene.
4. The cell of claim 3, wherein the cell is a murine cell.
5. The cell of claim 4, wherein the murine cell is an embryonic stem cell.
6. A non-human transgenic animal comprising a disruption in a PTP36 gene.
7. The non-human transgenic animal of claim 6, wherein the transgenic animal is a mouse.
8. A cell derived from the transgenic mouse of claim 7.
9. A method of producing a transgenic mouse comprising a disruption in a PTP36 gene, the method comprising:
  - (a) introducing the targeting construct of claim 1 into a cell;
  - (b) introducing the cell into a blastocyst;
  - (c) implanting the resulting blastocyst into a pseudopregnant mouse, wherein said pseudopregnant mouse gives birth to a chimeric mouse; and
  - (d) breeding the chimeric mouse to produce the transgenic mouse.

10. A method of identifying an agent that modulates the expression or function of a PTP36 gene, the method comprising:
- (a) providing a non-human transgenic animal comprising a disruption in a PTP36 gene;
  - (b) administering an agent to the non-human transgenic animal; and
  - (c) determining whether the expression or function of the disrupted PTP36 gene in the non-human transgenic animal is modulated.
11. A method of identifying an agent that modulates the expression or function of a PTP36 gene, the method comprising:
- (a) providing a cell comprising a disruption in a PTP36 gene;
  - (b) contacting the cell with an agent; and
  - (c) determining whether the expression or function of the PTP36 gene is modulated.
12. The method of claim 11, wherein the cell is derived from the non-human transgenic animal of claim 6.
13. An agent identified by the method of claim 10 or claim 11.
14. A transgenic mouse comprising a disruption in a PTP36 gene, wherein there is no significant expression of the PTP36 gene in the transgenic mouse.
15. A transgenic female mouse comprising a disruption in a PTP36 gene, wherein the transgenic female mouse exhibits androgenization, relative to a wild-type control mouse.
16. A transgenic female mouse comprising a disruption in a PTP36 gene, wherein the transgenic female mouse exhibits a uterine abnormality, relative to a wild-type control mouse.
17. The transgenic female mouse of claim 16, wherein the uterine abnormality comprises one or more of uterine dilation, presence of keratin in uterine horns, and presence of keratin in uterine lumen.
18. A transgenic female mouse comprising a disruption in a PTP36 gene, wherein the transgenic female mouse exhibits a hormonal imbalance, relative to a wild-type control mouse.
19. The transgenic mouse of claim 14, wherein the transgenic mouse is female and exhibits a phenotype, relative to a wild-type control mouse, selected from the group consisting of: increased body weight, increased liver weight, increased spleen weight, increased thymus

weight, increased liver weight to body weight ratio, and increased spleen weight to body weight ratio.

20. A transgenic female mouse comprising a disruption in a PTP36 gene, wherein the transgenic female mouse exhibits reduced mammary gland tissue, relative to a wild-type control mouse.
21. The transgenic female mouse of claim 20, wherein the transgenic female mouse exhibits an absence of mammary gland tissue.
22. A transgenic female mouse comprising a disruption in a PTP36 gene, wherein the transgenic female mouse exhibits an increased anogenital distance, relative to a wild-type control mouse.
23. A cell derived from the transgenic mouse of claim 14.
24. A method of identifying an agent that ameliorates a phenotype associated with a disruption in a PTP36 gene, the method comprising:
  - (a) administering an agent to a transgenic mouse comprising a disruption in a PTP36 gene; and
  - (b) determining whether the agent ameliorates the phenotype.
25. An agent identified by the method of claim 24.
26. An agonist or antagonist of PTP36.
27. Phenotypic data associated with a transgenic mouse comprising a disruption in a PTP36 gene, wherein the phenotypic data is in an electronic database.